REMARKS/ARGUMENTS

Claims 1 through 53 were rejected in the Final Office Action of July 25, 2006. In response, Applicant cancels claims 19-41 and 52-53, amends claim 49, adds new claims 54-69, and offers the following remarks. Therefore, claims 1-18, 42-51 and 54-69 are pending in the application.

Objection to the Specification under 37 C.F.R. § 1.75(d)(1)

The Specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. In the Final Office Action, the Examiner asserted that claim 20 had been amended to recite language not included in the specification. However, in making the objection, the Examiner quoted language from independent claim 19. Therefore, Applicant assumes the objection is directed to claim 19 and its dependent claims.

Applicant has canceled independent claim 19 and its dependent claims. Reconsideration and withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. § 112

Claims 20-30 were rejected under U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has canceled claims 20-30. Reconsideration and withdrawal of the indefiniteness rejection is respectfully requested.

Rejection under 35 U.S.C. § 102

a. Claims 52 and 53 were rejected under 35 U.S.C. § 102(b) as being anticipated by Bowes.

Applicant has canceled claims 52 and 53. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

b. Claims 52 and 53 were rejected under 35 U.S.C. § 102(b) as being anticipated by Goudy.

Applicant has canceled claims 52 and 53. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

c. Claims 19-29, 31-33, 35, 39-41, 49, 50 and 52 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kaltenbach.

Applicant has canceled claims 19-29, 31-33, 35, 39-41 and amended independent claim 49. Independent claim 49 now recites, "the third bearing surface ... generally faces downward to oppose the second bearing surface" and "the roller chain is located above the second and third bearing surfaces."

Kaltenbach's upward and downward opposed bearing surfaces 19, 20 are located above Kaltenbach's annular series of rollers 26. For at least this reason, Kaltenbach does not anticipate independent claim 49 or its dependent claims (50, 51, 54 and 55). Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

Rejection under 35 U.S.C. § 103

a. Claims 1-8, 11-22, 28-32, 38 and 42-48 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bowes in view of U.S. Patent 4,061,230 to Goss et al. ("Goss") or in view of SU 1337338.

Applicant has canceled claims 19-22, 28-32 and 38. With respect to claims 1-8 and 11-18 and 42-48, Applicant respectfully submits that Bowes teaches against the modification proposed by the Examiner.

In the Final Office Action, the Examiner states, "it would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the roller chain of Bowes by having it extend partially about the post and anchored at its ends ..., as taught by Goss et al or as taught by SU '338. *Final Office Action, p. 3, §7.*

Applicant respectfully submits that the modification of Bowes proposed in the Office Action would result in an inoperable bearing system, as can be readily understood from a close review of the figures in Bowes. As shown in Bowes Figs. 4-8, rollers 27 are linked together via tapered links 30 to form the asserted roller chain. The rollers 27 are pinched between pairs of opposed race rings 19, 25 and 20, 26. Race rings 25 and 26 extend from the outer peripheral surface of the housing 23, and race rings 19 and 20 extend from the inner peripheral surface of the casing 17. The housing 23 pivots within the casing 17 and, in doing so, each roller 27 must make rolling contact with both opposed race rings 19, 25 and 20, 26 associated with that roller 27.

If Bowes were modified such that the tapered links 30 and rollers 27 (i.e., the asserted roller chain) were anchored to either the housing 23 or casing 17, the rollers 27 would, in at least some loading circumstances, not be able to make rolling contact with both of their respective race rings. Causing the housing 23 to pivot relative to the casing 17 would force each roller 27 to slide against one or both of the races associated with the roller, thereby destroying the purpose of the roller bearing arrangement taught by Bowes and making Bowes roller bearing system inoperable.

For at least this reason, Bowes teach against its modification proposed in the Office Action. Applicant respectfully requests reconsideration and withdrawal of the obviousness rejection of claims 1 and 42 and their respective dependent claims.

b. Claims 9 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowes in view of Goss or in view of SU 1337-338, as applied to claim 19, and further in view of U.S. Patent 4,446,977 to McCain ("McCain").

Applicant has canceled claim 36. Applicant respectfully requests reconsideration and withdrawal of the obviousness rejection of claim 9 because, as explained above, Bowes teaches against its modification as proposed in the Office Action.

c. Claims 10 and 37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowes in view of Goss or in view of SU 1337-338, as applied to claims 1 and 19, and further in view of U.S. Patent 4,395,160 to deJong ("deJong").

Applicant has canceled claim 37. Applicant respectfully requests reconsideration and withdrawal of the obviousness rejection of claim 10 because, as explained above, Bowes teaches against its modification as proposed in the Office Action.

d. Claims 19-29, 31-33, 35, 39-41, 49-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach.

Applicant has canceled claims 19-29, 31-33, 35 and 39-41 and amended independent claim 49. Independent claim 49 recites, "the third bearing surface ... generally faces downward to oppose the second bearing surface" and the roller chain is located above the second and third bearing surfaces."

Kaltenbach's upward and downward opposed bearing surfaces 19, 20 are located above Kaltenbach's annular series of rollers 26. Goudy's upward and downward opposed bearing surfaces are part of its crane mounting system 70 at the top of the pedestal 16, which is above the rollers 43. Thus, neither Kaltenbach nor Goudy teach or suggest Applicant's invention as recited in independent claim 49. For at least this reason, the Kaltenbach/Goudy combination does not make obvious independent claim 49 or its dependent claims. Reconsideration and withdrawal of the obviousness rejection is respectfully requested.

e. Claims 19-21, 28-32, 34, 35, 38 and 49-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Bowes.

Applicant has canceled claims 19-21, 28-32, 34, 35 and 38. With respect to claims 49-51, the Applicant respectfully submits that the Goudy/Bowes combination fails to make obvious claims 49-51 for at least the following two reasons.

First, Applicant respectfully submits that Bowes teaches against the modification proposed in the Office Action. The Bowes rollers 27, links 30 and journalled rollers 32 (i.e., the Examiner's asserted roller chain) are configured such that each roller 27 can freely roll between its respective opposed races 19, 25 and 20, 26. As explained above, Bowes clearly teaches against its rollers 27 being anchored, because doing so would make the Bowes roller bearing

arrangement inoperable. For at least this reason, claims 49-51 are not made obvious by the asserted Goudy/Bowes combination.

Second, The Goudy/Bowes combination fails to teach or disclose each and every element of Applicant's invention as recited independent claim 49. Applicant's independent claim 49 recites, "A crane ... comprising: a center post including ... a second bearing surface, ... wherein the second bearing surface extends in a generally arcuate manner about the vertical axis and generally faces upward; a superstructure including a roller chain and a third bearing surface, wherein the third bearing surface extends in a generally arcuate manner about the vertical axis and generally faces downward to oppose the second bearing surface, and wherein the roller chain is located above the second and third bearing surfaces ...; and a fourth roller received between, and in rollable contact with, the second and third bearing surfaces. Neither Goudy nor Bowes discloses such a crane. For at least this reason, claims 49-51 are not made obvious by the asserted Goudy/Bowes combination.

Reconsideration and withdrawal of the obviousness rejection is respectfully requested.

f. Claim 36 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of McCain.

Applicant has canceled claim 36. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

g. Claim 36 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Bowes, as application to claim 19, and further in view of McCain.

Applicant has canceled claim 36. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

h. Claim 36 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach, as applied to claim 19, and further in view of McCain.

Applicant has canceled claim 36. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

i. Claim 37 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of deJong.

Applicant has canceled claim 37. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

j. Claim 37 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach or Bowes, as applied to claim 19, and further in view of deJong.

Applicant has canceled claim 37. Reconsideration and withdrawal of the anticipation rejection is respectfully requested.

k. Claims 51 and 53 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of Goudy.

Applicant has canceled claim 53. Claim 51 depends from independent claim 49, which recites, "the third bearing surface ... generally faces downward to oppose the second bearing surface" and "the roller chain is located above the second and third bearing surfaces."

Kaltenbach's upward and downward opposed bearing surfaces 19, 20 are located above Kaltenbach's annular series of rollers 26. Goudy's upward and downward opposed bearing surfaces are part of its crane mounting system 70 at the top of the pedestal 16, which is above the rollers 43. Thus, neither Kaltenbach nor Goudy teach or suggest Applicant's invention as recited in independent claim 49 or its dependent claim 51. For at least this reason, the Kaltenbach/Goudy combination does not make obvious claim 49 or its dependent claim 51. Reconsideration and withdrawal of the obviousness rejection is respectfully requested.

Claim Amendments and New Claims

Applicant has amended claim 49 to recite the positional relationship between the various bearing elements. Support for this amendment can be found in FIG. 3 and the specification discussion pertaining thereto.

Applicant has added new claims 54-69. Support for these new claims can be found in FIGS. 1-8, the specification and the claims as originally filed. Claim 54 is distinguishable over

the prior art of record for at least the following reasons. Only SU 133738, Kaltenbach and Bowes show use of linked rollers as part of an arrangement for dealing with radial forces in a crane.

SU 133738 shows a crane with a horizontal boom 5 and two separate sets of linked rollers, upper rollers at the top of the crane post and lower rollers at the level of the horizontal boom, just below the top of the crane post. In each of the upper and lower sets of linked rollers in SU 133738, the rollers are not equally spaced. Moreover the two end rollers in each set are held in a fixed, opposed position at 180 degrees by a rigid yoke; thus the ends of roller sequence have no ability to pivot radially and participate in a radial adjustment when the chain is placed in tension, so as to equalize the forces on each roller in the linked chain. As to the intermediate rollers that can pivotally adjust when the roller chain is placed in tension, their unequal spacing means that the load is not equally distributed.

Kaltenbach also shows two separate sets of linked rollers. These are on the same level and are coordinated to encircle the tower 15 and ride on thrust rails 25. Because Kaltenbach shows a boom that is generally balanced (counterbalancing portion 10a; Kaltenbach page 1, lines 95-101) and because the "heavy pivotal pin 17" at the top of tower 15 supports the "entire weight of the rotating structure, as well as the live load supported by it, [which] is transmitted to the top of the tower" (Kaltenbach, page 2, lines 16, 34-42), Kaltenbach's annular rollers are dealing with much smaller forces, only those that are not balanced and can be transmitted down through the skirt 15. Moreover, although Kaltenbach's rollers can pivot relative to the adjacent roller and may equalize forces among the rollers in each of the opposed half-rings (see Kaltenbach Figure 2), there is a boundary discontinuity in loading at each end of the half-rings (Kaltenbach, Figure 2, 13). At and across this boundary there is no means for equalizing, because the tension in the linked rollers is determined by separate tensioning mechanisms. Moreover, the half-rings do not appear to be oriented so that the boom radial forces are symmetrically applied to either half-ring. This is in part because with a counter-balanced boom, the application of the radial loads may apply tension either at the boom side or at the counter-balance side.

Bowes' linked rollers 27 are pinched between opposed surfaces and are not anchored at any end. Thus, they do not function as a flexible chain in tension. They are not able to effect equalization of forces at the rollers 27, as does applicant's structure. Moreover, the rollers 27 are captured in groups of three in tapered links 30. This also would seem to prevent equalization of forces within the groups of three, where adjacent rollers are not connected by pivoting links.

As a result, none of SU 133738, Kaltenbach or Bowes has the ability to distribute load and wear equally across the rollers in a linked sequence. Applicant's invention provides this equal distribution, by joining the rollers with pivoting links and placing the rollers in tension with the anchoring end rollers being symmetrical about the post and the arc of linked rollers being substantially symmetrical relative to the boom feet 22 and thus the extended boom. This and the equal spacing of the rollers provides symmetrical and equalized loading of the rollers in the roller chain. These features makes the design easier (no single roller needs to be designed for a major portion of the full chain load) and also longer lasting.

CONCLUSION

This application now stands in allowable form and reconsideration and allowance of claims 1-18, 49-51 and 54-69 are respectfully requested.

The Commissioner is hereby authorized to charge any deficiencies or credit any overpayments to Deposit Account No. 04-1420.

Respectfully submitted,

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